OCEAN GALES AND STORMS, JANUARY 1935—Continued

Vessel	Voyage		Postion at time of lowest barometer		Gale began January—	Time of lowest barometer January—	Gale ended January—	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN			° ′	° ′				*Inches*					
Yeiyo Maru, Jap. S. S.	Los Angeles	Tokuyama	33 11 N.	154 33 E.	11	4p, 11	11	[2] 29. 26	WSW.	SW, 7	WNW.	W, 9	SW - WSW - WNW.
Tahchee, Br. S. S.	Yokohama	Los Angeles	39 00 N.	162 30 E.	11	2p, 12	13	28. 76	E.	Var. 3	WNW.	WNW, 11	ESE-E-NW
Olympia, Am. S. S.	Tacoma	Yokohama	[1] 46 35 N.	154 32 E.	11	Mdt. 11	14	29. 36	S.	S, 8	NW.	NW, 9	SSE-S-WSW.
Golden Hind, Am. S. S.	Tsingtau	San Francisco	44 17 N.	163 12 E.	13	6p, 13	15	28. 59	W.	W, 12	SW.	W, 12	NW-W.
City of Victoria, Br. S. S.	Dairen	Vancouver	45 02 N.	154 02 E.	12	Noon, 14	15	28. 89	NNW.	NW, 8	WNW.	NW, 9	NNW-NW.
Pres. Grant, Am. S. S.	Seattle	Yokohama	47 01 N.	163 30 E.	13	4a, 14	15	28. 08	ESE.	NW, 5	NW.	E, 11	NE-NW.
Pres. Jackson, Am. S. S.	Yokohama	Victoria, B. C.	42 20 N.	157 10 E.	13	6a, 15	16	29. 52	N.	WNW, 9	WNW.	W, 10	
Mala, Am. S. S.	New Westminster.	Honolulu	47 48 N.	126 06 W.	16	3p, 16	17	29. 38	W.	W, 7	WNW.	W, 8	None.
Michigan, Am. S. S.	Otaru, Japan	San Francisco	44 38 N.	150 05 E.	16	2p, 17	18	28. 59	NE.	NNE, 8	W.	NE, 9	NE-N.
Seattle, Am. S. S.	Seattle	Yokohama	50 01 N.	178 35 E.	17	4a, 19	19	29. 37	SSE.	S, 8	S.	SSE, 9	SSE-S-WSW.
Michigan, Am. S. S.	Otaru, Japan	San Francisco	48 07 N.	162 52 E.	19	10p, 19	21	28. 16	NE.	SE, 11	SSW.	SE, 11	E-SE-S.
Seattle, Am. S. S.	Seattle	Yokohama	49 06 N.	172 45 E.	20	2p, 20	20	28. 88	E.	E, 8	SW.	WSW, 9	ESE-E-WSW.
Kentucky, Am. S. S.	Dairen	Los Angeles	41 17 N.	158 50 E.	19	Noon, 19	22	29. 22	N.	N, 8	NNW.	NW, 9	NNE-N-NW.
Gen. M. H. Sherman, Am. S. S.	Hilo, Hawaii	do	28 18 N.	138 06 W.	20	3a, 21	20	29. 80	SSE.	SSE, 7	SSE.	SSE, 8	SSE-S.
Astoria, Am. S. S.	San Francisco	Portland, Oreg.	44 06 N.	124 24 W.	21	4p, 21	21	30. 06	SE.	SSE, 9	SSE.	SSE, 9	SE-SSE.
Georgian, Am. S. S.	Los Angeles	Balboa	13 55 N.	95 55 W.	22	7a, 22	23	29. 94	NNE.	NNE, 10	N.	NNE, 10	NNE-N.
Juyo Maru, Jap. S. S.	Muroran	Coos Bay, Oreg.	42 22 N.	141 01 E.	22	6a, 22	24	[2] 29. 10	NW.	NW, 5	WNW.	WNW, 9	SW-NW.
Malolo, Am. S. S.	Los Angeles	Honolulu	25 50 N.	147 24 W.	23	5a, 23	23	29. 55	S.	SW, 8	WSW.	WSW, 8	S-SW-W.
Mariposa, Am. S. S.	Honolulu	Los Angeles	25 45 N.	145 40 W.	23	6a, 23	23	29. 60	S.	S, 7	S.	S, 8	None.
Heian Maru, Jap. M. S.	Yokohama	Vancouver	38 54 N.	146 54 E.		10p, 23	24	29. 51		W, 9		W, 9	
Soyo Maru, Jap. M. S.	Los Angeles	Balboa	14 35 N.	95 53 W.	23	4p, 23	24	[2] 29. 88	NE.	NE, 6	NNW.	NNE, 8	ENE-NE-N.
Santos Maru, Jap. M. S.	Balboa	Los Angeles	14 23 N.	94 33 W.	23	Mdt. 23	24	29. 92	NE.	N, 7	N.	NE, 9	NE-N.
Everett, Am. S. S.	Manila	do	35 00 N.	170 42 W.	27	1p, 27	27	29. 06	W.	WNW, 10	NW.	WNW, 10	
Hauraki, Br. M. S.	Samoa	Vancouver	36 54 N.	139 19 W.	27	4p, 27	28	29. 26	S.	S, 8	SW.	SW, 9	S-SSW.
Susan V. Luckenbach, Am. S. S.	Balboa	Los Angeles	14 27 N.	96 27 W.	27	4a, 28	28	[2] 30. 18	NNE.	NE, 7	NE.	NE, 8	Steady.
Maliko, Am. S. S.	San Francisco	Honolulu	28 30 N.	145 30 W.	28	10a, 28	28	29. 54	SW.	SW, 8	WSW.	WSW, 10	SW-WSW.
Tosari; Du. M. S.	Manila	Los Angeles	32 58 N.	154 43 W.	26	4a, 27	30	29. 09	WSW.	WSW, 6	S.	WSW, 10	WSW-W.
Asama Maru, Jap. M. S.	Honolulu	San Francisco	29 06 N.	144 32 W.	28	Noon, 28	29	29. 57	W.	W, 7	W.	W, 8	SSW-W.
Hauraki, Br. M. S.	Samoa	Vancouver	[1] 41 27 N.	134 30 W.	28	Mdt. 28	30	28. 98	SE.	SE, 9	SSE.	SSE, 11	SE-SSE.
City of Victoria, Br. S. S.	Dairen	do	49 14 N.	138 26 W.	29	7a, 29	29	28. 30	NE.	ESE, 7	SSE.	SE, 10	NE-SE.
Michigan, Am. S. S.	Otaru, Japan	San Francisco	[1] 46 44 N.	145 41 W.	29	Noon, 29	29	28. 48	NNW.	NW, 9	W.	NW, 9	N-NW-W.
City of Elwood, Am. M. S.	Balboa	Los Angeles	13 50 N.	95 15 W.	30	5a, 30	30	29. 97	N.	N, 8	NNE.	N, 8	N-NNE.
Maliko, Am. S. S.	San Francisco	Honolulu	[1] 25 34 N.	150 58 W.	29	8a, 30	30	29. 65	SW.	S, 7	NW.	SW, 9	S-SW.
City of Victoria, Br. S. S.	Dairen	Vancouver	49 18 N.	131 51 W.	31	4a, 31	31	29. 34	SE.	SE, 7	SE.	SE, 8	
Maliko, Am. S. S.	San Francisco	Honolulu	22 36 N.	155 30 W.	31	2p, 31	31	29. 72	WNW.	WSW, 8	WSW.	WSW, 8	
Jeff Davis, Am. M. S.	Kelung, Formosa.	Los Angeles	33 59 N.	145 58 E.	31	8a, 31	**1	29. 45	SSW.	SSW, 8	NW.	WNW, 10	SSW-W.
San Diego Maru, Jap. M. S.	Kobe	do	[1] 37 10 N.	149 51 E.	31	4p, 31	**1	[2] 28. 90	SSE.	WSW, 10	NW.	W, 10	SSE-WSW-W.
Tatsuno Maru, Jap. S. S.	Otaru, Japan	do	42 18 N.	160 46 E.	31	8a, 1**	**1	28. 67	ESE.	ENE, 3	NNW.	ESE, 9	ESE - ENE - NNW.

[1] Position approximate. [2] Barometer uncorrected. ** February

NORTH PACIFIC OCEAN, JANUARY 1935

By WILLIS E. HURD

Atmospheric pressure.—The pressure situation on the North Pacific during January 1935 was in some respects unusual. On the average the entire Aleutian region and a huge area of the sea to the southward was dominated by cyclonic activity. At the Alaskan island stations the barometer was about 0.1 inch above the normal, while at Midway Island and Honolulu, it was about the same amount below, thus indicating the south-reaching effect of the great mid-ocean cyclones. The longitudinal extent of the depressed region was ocean wide, particularly between 40° and 50° north latitude, where abnormally low pressures extended from coast to coast.

The anticyclone off the California coast was much restricted in area and extended southwestward only about half the distance to the Hawaiian Islands.

In Asiatic waters the effects of the continental anticyclone extended eastward to the Ogasawara Islands and southward to the Philippines. The result was that at Manila the average pressure, 29.94 inches, was 0.05 above the normal. At Guam, where the normal winter pressure is practically the same as that at Manila, the January average in 1935 was 29.83 inches, or 0.11 inch lower than at Manila.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, January 1935, at selected stations*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow	30.17	+0.09	30.82	15, 22	28.98	9
Dutch Harbor	29.66	+.08	30.46	10	28.96	4
St. Paul	29.65	+.02	30.20	19	28.62	4
Kodiak	29.68	+.09	30.56	11	28.72	27
Juneau	29.88	.00	30.60	17	29.03	5
Tatoosh Island	29.86	−.12	30.33	20	29.29	16
San Francisco	30.07	−.04	30.48	21	29.61	9
Mazatlan	29.95	.00	30.04	30	29.86	14
Honolulu	29.92	−.08	30.13	6	29.68	23
Midway Island	29.92	−.11	30.16	9	29.62	10
Guam	29.83	−.07	29.92	7, 8	29.72	29
Manila	29.94	+.05	30.06	25	29.82	14
Hong Kong	30.09		30.28	24	29.87	14
Naha	30.10	+.02	30.32	23	29.80	14
Chichishima	30.01	.00	30.18	25	29.58	15
Nemuro	29.86		30.24	2	29.16	21

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales. —The western half of the North Pacific was unusually stormy during much of January, and on a third of the days of the month gales of the higher forces (11 to 12) occurred over the region from the central Aleutians southwestward to Japan, and as far south—

between 140° and 170° E.—as approximately the 35th parallel.

Over the central part of the ocean, while low pressure prevailed and the weather was unsettled, gales were far less frequent and severe.

Toward the American coast storminess increased, and there was an unusual prevalence of gales along the west coast—Hawaiian routes. In only one instance in these waters, however, was there report of a velocity exceeding force 10.

While in the previous December it was observed that an unusually small number of Asiatic continental cyclones entered upon the ocean, this was not the case in January, since a number of middle and high latitude storms in far eastern waters were of land origin.

The month opened with intense cyclonic activity disturbing much of the western half of the northern steamship route. Between Honshu, Japan, and longitude 150° E., hurricane velocities, with pressures close to 29 inches, occurred on the 1st, while gales of force 11–12 were simultaneously experienced by ships south of the central Aleutians and also midway between that point and northern Japan, with central pressures well below 29 inches. Heavy gales continued over most of the region through the 4th, moderating on the 5th, although even on that date one encounter with a whole gale was reported by a ship southeast of the Kuril Islands. On the 2d and 3d, the American S. S. *Golden Star* reported a force of 11 near 41° N., 163° E. On the 4th the American S. S. *Olympia* read the lowest pressure of the period—28.19 inches—near 50° N., 175° E., accompanied by a wind of force 11.

On January 11 two cyclones—one from south of Japan and the other from the neighborhood of Sakhalin Island and the Okhotsk Sea—entered the sea area east of Japan and the Kuril Islands. Thereafter another period of great storm depth and violence ensued over practically the same region as that covered by the gales of the 1st to 5th. The intensity was most strongly concentrated in the area between 35° and 50° N., 160° to 170° E., where winds of force 11 to 12 occurred on the 12th to 14th, accompanied by pressures below 28.50 inches. The American S. S. *Golden Hind*, near 44° N., 163° E., on the 13th, encountered hurricane winds, and in her weather report quoted from a Tokyo storm message of the 15th to the effect that the disturbance moving northeastward, was then central near 50° N., 164° E., lowest pressure of 27.95. The American S. S. *General Grant*, in 47° N., 163½° E., on the 14th, reported an east gale of force 11, lowest pressure 28.08.

Meanwhile a deep Japanese cyclone entered the already disturbed region on the 15th and 16th, and for several days lay to the eastward of the Kuril Islands. The American S. S. *General Lee* encountered winds of hurricane force on the 19th, in connection with it, near 48° N., 158° E., and on the 20th the American S. S. *Michigan*, about 5° to the eastward, also experienced hurricane velocities, with lowest barometer, 28.16 inches. Storm conditions abated during the 21st.

Toward the end of the month a depression, which originated near Taiwan, moved northeastward and developed sufficiently when near 35° N., 150° E., to cause strong to whole gales in the vicinity.

On the 15th to 18th, during the prevalence of a powerful anticyclone over southeastern Asia and the adjacent waters, a strong northeast monsoon prevailed along the entire east China coast to the Nansei Islands and Luzon.

Over the eastern half of the Pacific, an unusual amount of stormy weather occurred along the west coast routes to the Hawaiian Islands. A moderate cyclone caused gales of force 8–9 midway along the routes on the 1st to 3d, and from the 20th until the end of the month gales of similar force were of almost daily occurrence in the general neighborhood.

About the 15th a moderate LOW gathered to the northward of the Hawaiian Islands. It spread rapidly in area until, by the 20th it had covered much of the middle and northern part of the ocean. The central part of this enormous depressed region was not particularly stormy, but along its eastern and southeastern boundaries storm activity was more pronounced. On the 16th and 17th fresh westerly gales blew outside of Cape Flattery, and on the 21st fresh to strong southerly gales disturbed the coastal waters off Washington and Oregon.

On the 21st the Japanese M. S. *Hokuman Maru* was distressed in heavy seas about 500 miles west of Vancouver, and her crew of 45 persons was taken off by the American S. S. *President Jackson*. Up to the end of January search for the abandoned vessel by plane and salvage ship was reported as so hampered by stormy weather, snow, and fog, that further effort in that direction was temporarily discontinued.

During the 27th to 30th winds of considerable violence were reported north of the 35th parallel, between 130° and 145° W., culminating in a southerly gale of force 11, pressure 28.98, experienced by the British M. S. *Hauraki*, near 41½° N., 134½° W.

Tehuantepecers.—Norther weather was frequent this month in the Gulf of Tehuantepec, and gales were reported by ships in these waters, as follows: Of force 7 on the 27th and 29th; of force 8 on the 3d, 23d, 25th, 28th, and 30th; of force 9 on the 24th; and of force 10 on the 22d.

Fog.—From a meteorological standpoint, the most interesting reports of fog in January of this year were those which showed its occurrence on 4 days in the Gulf of Tehuantepec. Fog was observed off Lower California on 2 days, and off California on 6 days. At some distance off the west coast it was reported on 5 days late in the month.